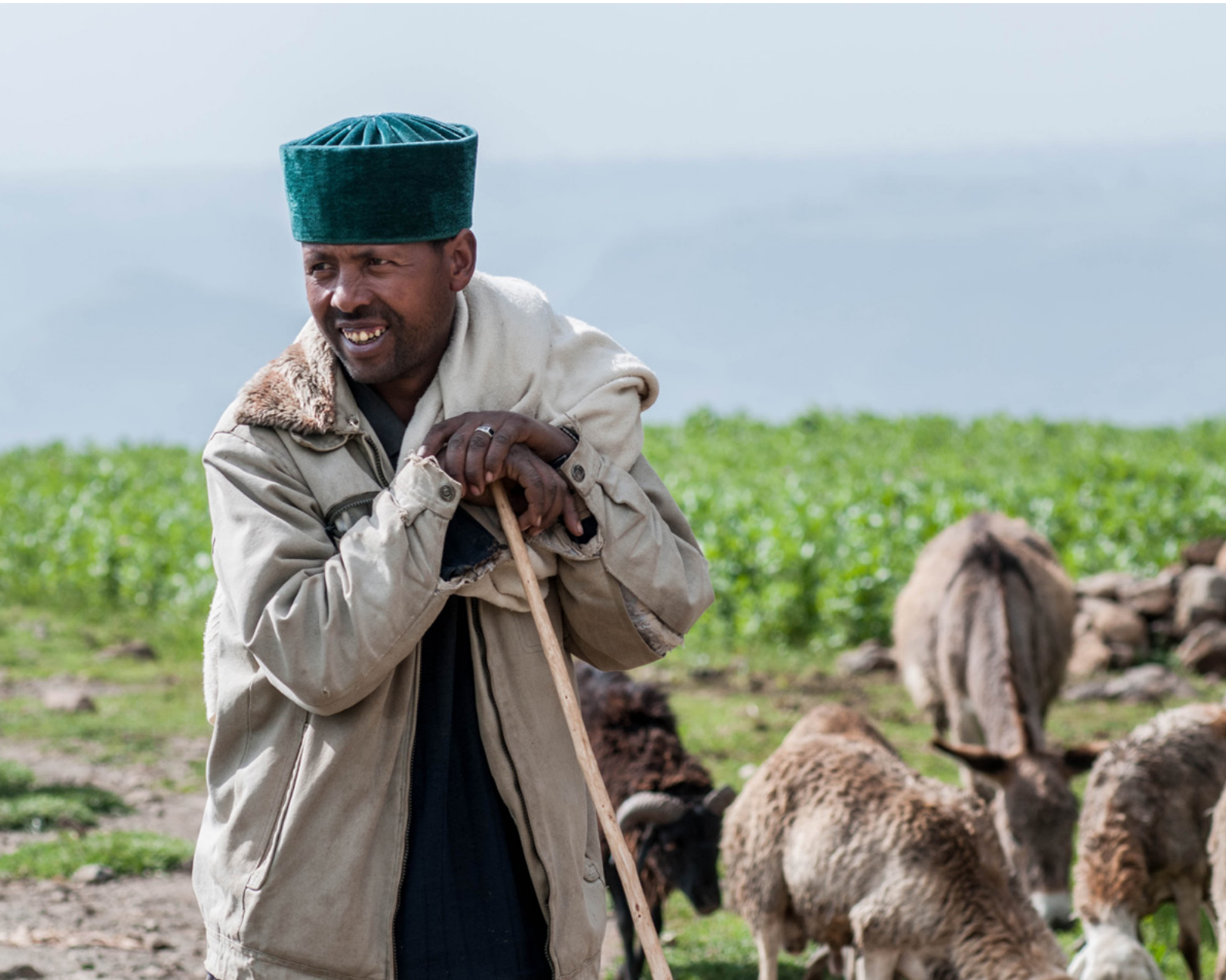
RESEARCH PROGRAM ON
Climate Change, Agriculture and Food Security

CGIAR CCAFS

The SmartAG Partner

CCAFS East Africa Quarterly Newsletter

January - March 2018



Editing: Lili Szilagyi, Catherine Mungai and Maren Radeny
Design and Layout: Solomon Makau

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Message From
The Program Leader

Dear readers,

We are pleased to share with you our SmartAg Partner newsletter, highlighting policy engagement and ongoing research from the first quarter of 2018.

In February, the CCAFS East Africa team convened in Arusha, Tanzania, for a strategy meeting that brought together 65 stakeholders comprising of researchers, regional policymakers, experts from governments, private sector, multilateral international organizations and NGOs from East Africa and around the world to develop an integrated research for development strategy for CCAFS East Africa.

The CCAFS strategy meeting was held back to back with the kick-off meeting of the Food & Business GCP4 projects which took place on 6–7 February. The eight research projects funded in the fourth Global Challenges Programme call will be implemented in East Africa beginning 2018 and focus on how to scale climate-smart agriculture practices, private sector engagement and inclusive business model development in East Africa. The new projects will contribute to the achievement of the regional strategy for development.

To enhance climate change and agriculture policy processes with key research and development actors from Africa, we established the Climate and Agriculture Network for Africa (CANA), a knowledge sharing web-based platform in 2014. Since then, we have continued to host webinars and online discussions via the platform. From 23 April to 21 May 2018, we shall host an online discussion on Partnerships, innovations and financing for youth in climate-smart agriculture. Kindly join us in the discussion as we dialogue on how to engage African youth in climate-smart agriculture.

Dr. Dawit Solomon

1

Setting an innovative vision for transforming agriculture and food security under climate variability and change in East Africa

Developing an integrated research for development strategy for CCAFS East Africa.

By Catherine Mungai and Maren Radeny

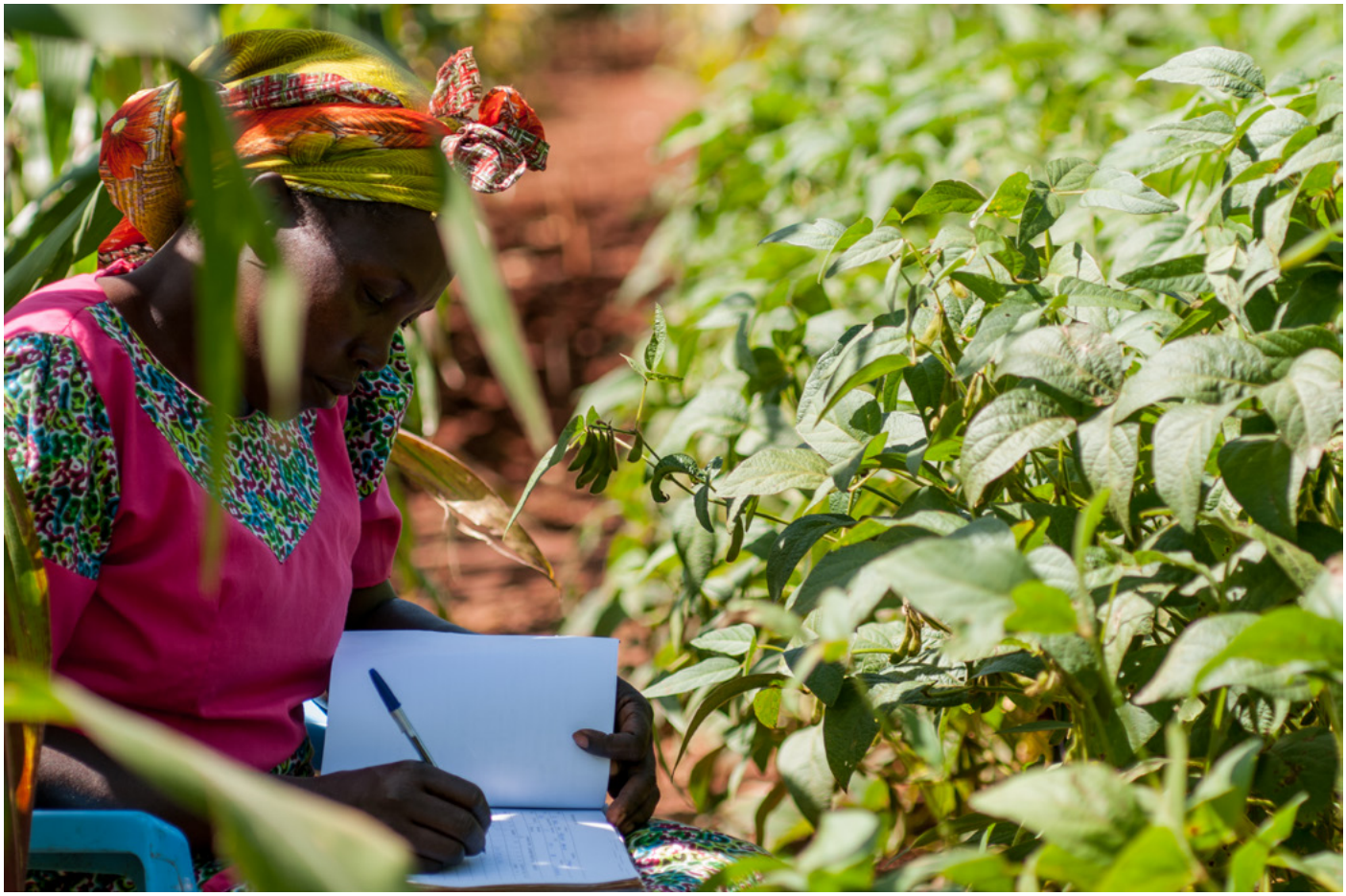
"We cannot conduct business as usual and expect to transform Africa's agriculture, especially in this era of increasing climate variability and change," Dawit Solomon, Regional Program Leader, CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) East Africa.

Dawit Solomon made this remark during the CCAFS East Africa Strategy Meeting held in Arusha, Tanzania between 8 and 9 February 2018. The meeting brought together 65 stakeholders comprising of researchers, regional policymakers, experts from governments, private sector, multilateral international organizations and NGOs from East Africa and around the world to develop an integrated research for development strategy for CCAFS East Africa. Through a range of participatory and interactive approaches, the stakeholders examined the interactions, synergies and trade-offs between climate change, agriculture, and food nutrition and security, highlighting new opportunities to advance climate-resilient and low emissions agriculture, reduce vulnerability, and enhance nutrition and diversify smallholder incomes in East Africa, integrating gender and social inclusion.

National, regional and continental priorities

In order to ensure demand-driven research for development aligned with national, regional and global priorities, the meeting started off with a panel discussion comprising of policymakers from the four CCAFS focus countries in East Africa— Ethiopia, Kenya, Uganda and Tanzania—and representatives from the African Group of Negotiators to give a regional and continental perspective. The panel discussion focused on climate change-related challenges and opportunities for each country and identified entry points for CGIAR and specifically for CCAFS including opportunities for collaboration. George Wamukoya of VUNA and a member of the African Group of Negotiators (AGN) moderated the discussion and the panelists included:

- Debasu Bayleygn Eyasu – Ministry of Environment, Forest and Climate Change, Ethiopia
- Robin Mbae – Ministry of Agriculture, Livestock and Fisheries, Kenya
- Stephen Muwaya – Ministry of Agriculture, Animal Industry and Fisheries, Uganda
- Mponda Malozo – Ministry of Agriculture, Food Security and Cooperatives, Tanzania



G. Smith (CIAT)

Woman farmer in Kenya, one of the priorities countries of CCAFS East Africa. The meetings focused on how to scale climate-smart agriculture practices in East Africa.

• Raymond Kasei – Representing the African Group of Negotiators

Key challenges emerging across the region include low agricultural productivity, increase in pest and disease incidences, post-harvest losses and low uptake of technologies. Proposed priority areas for CCAFS and CGIAR support included:

• Developing monitoring and evaluation indicators for measuring agricultural resilience;
• Data to inform the implementation of nationally determined contributions (NDCs);
• Implementation of the CSA strategies and frameworks developed in different countries including providing evidence on successful CSA practices and technologies for up scaling;
• Input into national Medium Term Plans;
• Climate finance and insurance;
• Information services and capacity building for researchers and policymakers in East Africa.

What role can science play?

With increasing climate variability and change, the scientific community has an essential role to play in informing synchronized, strategic investments to establish climate-resilient agricultural production systems, minimize greenhouse gas emissions, make efficient use of resources and ensure food nutrition and security. During the meeting, scientists from different CGIAR centers shared ongoing work on climate change adaptation and mitigation in East. These included:

• Peter Craufurd of CIMMYT shared how the Taking Maize Agronomy to Scale in Africa (TAMASA) initiative is applying technology to increase knowledge delivery through smartphone.
• Polly Ericksen spoke on the work ILRI is doing under the program on climate-smart livestock which seeks to provide scientific evidence to livestock stakeholders. This is especially critical to inform countries as they implement their Nationally Determined Contributions.
• Evan Girvetz of CIAT highlighted various initiatives on CSA, including the application of CCAFS science to de-risk agriculture to improve access to credit for smallholder farmers, business models for scaling CSA and technical support to guide large investments in CSA.
• Todd Rosenstock shared some of the on-going climate change related projects at ICRAF which focus on climate-smart value chains including access to credit, climate-smart agroforestry and multi-scale co-learning processes to scale up climate-smart options.
• Laurence Jassogne shared how IITA is supporting the development and implementation of policies on climate change adaptation and mitigation, including an example from the coffee sector.
• Rosa Maria Roman-Cuesta of CIFOR demonstrated how a landscape approach can be used to manage trade-offs between social and ecological impacts including landscape restoration through integrated landscape management practices.
• Carlo Fadda of Bioversity spoke about community seed banking initiatives in Ethiopia, Tanzania and Uganda including seed trade within the region.

Emerging innovative research areas

To further support the scientific input, six presentations were shared by thematic speakers on emerging areas for research and development. The themes included climate services, climate finance, linking mitigation science and policy, the role of decision support tools and the role of the youth. Specific topics covered included:

• Improving availability, access, and use of climate information and ICT-based agro-advisory in East Africa, Jim Hansen – IRI, Columbia University, USA.
• Bringing East African countries together to find ways to grow more food without increasing greenhouse gas emissions, Hayden Montgomery – the Global Research Alliance on Agricultural Greenhouse Gases.
• Making climate finance work for agriculture in East Africa, Alberto Millan – World Bank's Global Food and Agriculture Practice (GFADR).
• Implementing innovative/transformative adaptation and mitigation science and policy measures for East Africa agriculture, Andreas Wilkes – UNIQUE forestry and land use, Germany.
• Applying interactive decision support tools to understand how climate change and natural disasters impact agriculture, food security and livelihoods in East Africa, Travis Franck – Climate Interactive.
• Transformation of East African Agriculture with ICT-based digital solutions and the youth, Romano Kiome – ILRI.

New CSA projects launched in East Africa

In terms of investments, moving forward, Bruce Campbell, director of CCAFS pointed out that 4 million dollars will be invested annually in the 4 CCAFS focus countries. "Yearly, about 20 million dollars is raised by the programme for climate-smart agriculture projects for all the five regions in the world, including Africa," he added during the media interview held at the strategy meeting.

The CCAFS strategy meeting was held back to back with the kick-off meeting of the Food & Business GCP4 projects which took place on 6 – 7 February. The eight research projects funded in the fourth Global Challenges Programme call will be implemented in East Africa beginning 2018, and focus on how to scale climate-smart agriculture practices in East Africa. The new projects will contribute to the achievement of the regional strategy for development.

Read more:

Blog: 8 new projects join forces to scale climate-smart agriculture: https://bit.ly/2L24D9r
Blog: What's the state of climate adaptation and mitigation efforts in African agriculture?: https://bit.ly/2wHuJeO
Blog: Unpacking climate-smart agriculture for upscaling in East Africa: https://bit.ly/2Inps1x
Blog: Is digital agriculture the key to revolutionize future farming in Africa? https://bit.ly/2rLYlCc
GCP/NWO summary: Kick-off meeting of the Food & Business GCP4 projects https://bit.ly/2L8VifY

Catherine Mungai is the Partnerships and policy specialist at CCAFS East Africa.
Maren Radeny is the Science officer at CCAFS East Africa.

2

How Ethiopia's social safety net programme leads to climate change mitigation co-benefits

Social safety net programs that include the restoration of degraded land and agroecosystems at scale are expected to provide increased food nutrition and security, while also contributing to climate change mitigation as a co-benefit.

By Dawit Solomon, Dominic Woolf, Lili Szilagyi and Catherine Mungai

Land degradation is a global problem that adversely affects the livelihoods and food security of billions of people. Among the world's largest food security programs are public works programs focused on restoring degraded land. Such land restoration is expected—over the long term—to contribute to increased food security.

A recently published article by Cornell University and CCAFS researchers, co-authored by Dawit Solomon, CCAFS East Africa Regional Program Leader, looks at the potential and possible pitfalls of the climate mitigation co-benefits of such programs, focusing on Ethiopia's Productive Safety Net Program (PSNP).

Ethiopia's Productive Safety Net Program

Key facts:

- PSNP provides food and financial support to beneficiaries in exchange for public works.
- More than 8 million farming communities benefit from it and it covers over 600,000 ha of land.
- It implements participatory integrated watershed management and degraded ecosystem rehabilitation programs at both the landscape and smallholder farm levels to restore and build the productive capacity and ecosystem services of the land.

Ethiopia has been deemed a climate "hotspot"—a place where a changing climate could pose grave threats to agricultural production, food security, and human well-being. These threats are exacerbated by the rampant land degradation in the country. Ethiopia's Productive Safety Net Program (PSNP) aims to increase the rural smallholder communities' long-term resilience to food shortages. Ethiopia launched the PSNP in 2005 to respond to the needs of food-insecure households while creating productive investments that promote rural economic growth and environmental rehabilitation.

The authors suggest that, although the intent of Ethiopia's PSNP was to improve resilience and livelihoods, an unintended co-benefit is climate change mitigation from reduced greenhouse gas (GHG) emissions and increased landscape carbon stocks.

According to the study, which was carried out in 24 woredas (districts), the total reduction in net GHG emissions from PSNP's land management strategy at the national scale is estimated at 3.4 million Mg CO2e y-1, approximately 1.5% of the emissions reductions in Ethiopia's Nationally Determined Contribution (NDC) for the Paris Agreement.

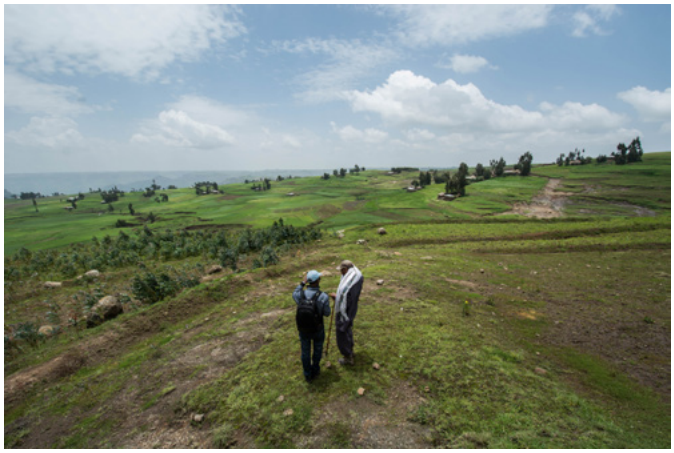
The article explores some of the opportunities and constraints for scaling up this impact. For example:

• Improving management and implementation of individual projects can bring the average carbon benefits closer to the higher levels that were observed in the better performing survey sites.
• Further scaling up will require a transition away from the sub-watershed projects that presently characterize PSNP, towards jurisdictional approaches that incentivize the sustainable management of landscapes over entire woredas, zones or regional states.
• PSNP is only one of the large-scale programs conducting sustainable land management in Ethiopia. The potential for scaling up of public works to provide a more substantial contribution towards Ethiopia's NDC should, therefore, take a coordinated and integrated approach that encompasses all of the relevant national programs.

The World Bank's PSNP Climate Smart Initiative in Ethiopia was the basis for the study. Key international policy insights from CCAFS' assessment of the initiative include:

• Food security programs can contribute to climate change mitigation by creating a vehicle for investment in land and ecosystem restoration.
• Maximizing mitigation, while enhancing but not compromising food security, requires that climate projections, and mitigation and adaptation responses should be mainstreamed into planning and implementation of food security programs at all levels.
• Cross-cutting oversight is required to integrate land restoration, climate policy, food security and disaster risk management into a coherent policy framework.
• Land-based productive safety net and food security programs have synergies with climate change mitigation. These efforts are not mutually exclusive.
• The study shows that the unintended climate change mitigation co-benefits of this food-security and safety net investment is clearly supporting Ethiopia's Climate Resilient Green Economic policy and programs.

The lessons learned from the Ethiopian experience described in the article have the potential to inform safety net programs in developing countries worldwide, creating an opportunity for social protection to also provide a mechanism to support international and national responses to climate change. Additional research on the social and economic trade-offs and co-benefits between land restoration works and food security will be required to fully realize the potential of such programs to contribute to stabilizing the Earth's climate within safe limits.



G. Smith (CIAT)

Landscape in Ethiopia, one of the East African countries where CCAFS works to help farmers adapt to climate change.

In order to build resilience in agricultural systems in Ethiopia and to provide evidence and data on climate-smart agriculture (CSA) technologies and practices, CCAFS has established 3 Climate-Smart Villages (CSVs): Borana pastoral site in Southern Region, Lemo district site in the Southern Highlands and Basona-Worana district site in the central highlands. The CSVs enable researchers, local partners, farmers' groups and policymakers to test portfolios of CSA technologies and practices with the aim of scaling up successful innovations.

Read more:

Download the article: Land restoration in food security programmes: synergies with climate change mitigation. Climate Policy : https://bit.ly/2rP6e9I
Brochure: Climate-Smart Villages An AR4D approach to scale up climate-smart agriculture: https://bit.ly/2IqWX3a
The PSNP is implemented by the Government of Ethiopia with support from the following development partners: UK Department for International Development, United States Agency for International Development, Royal Netherlands Embassy, Swedish International Development Cooperation Agency, Canadian International Development Agency, Irish Aid, European Commission, World Food Program and The World Bank.

Dawit Solomon is the Regional Program Leader at CCAFS East Africa.
Dominic Woolf is a Research Associate at SIPS - Soil and Crop Sciences Section, College of Agriculture and Life Sciences (CALS), at Cornell University.
Lili Szilagyi is the Communications consultant for CCAFS East Africa.
Catherine Mungai is the Partnerships and Policy Specialist for CCAFS East Africa.

3

Climate services in agriculture: What are the costs and benefits of investment for Africa?

New paper reviews different evaluation methods for informing stakeholders about the benefits of different options for investing in climate services for African agriculture.

By Lili Szilagyi and Catherine Mungai

Extreme climate events such as droughts, floods, dry spells, heatwaves and storms are becoming more frequent and severe around the world. Smallholder farmers in Africa are especially vulnerable to weather variability, which can occur both between seasons and within a season.

The benefits of climate services

Climate services empower smallholder farmers, particularly in climate-sensitive developing countries such as those in Africa, and allow them to reduce climate-related losses and enhance benefits, protecting lives, livelihoods and property.

There are many promising initatives across Africa that aim to improve the access to and quality of climate information services. On the national scale, however, funds for public sector services, including climate services, have come under increasing budgetary pressure. Therefore, there is need to make decisions on how to use the often scarce financial resources for climate services in agriculture most effectively.

Decisions to invest in new services or improvements to existing ones are best made on the basis of evidence of the benefits that the changes are predicted to produce, relative to the costs. A recently published working paper by the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) reviews the suitability of ex-ante evaluation methods for informing funding agencies, the private sector, and other national and regional stakeholders about the benefits of different investment options in climate services.

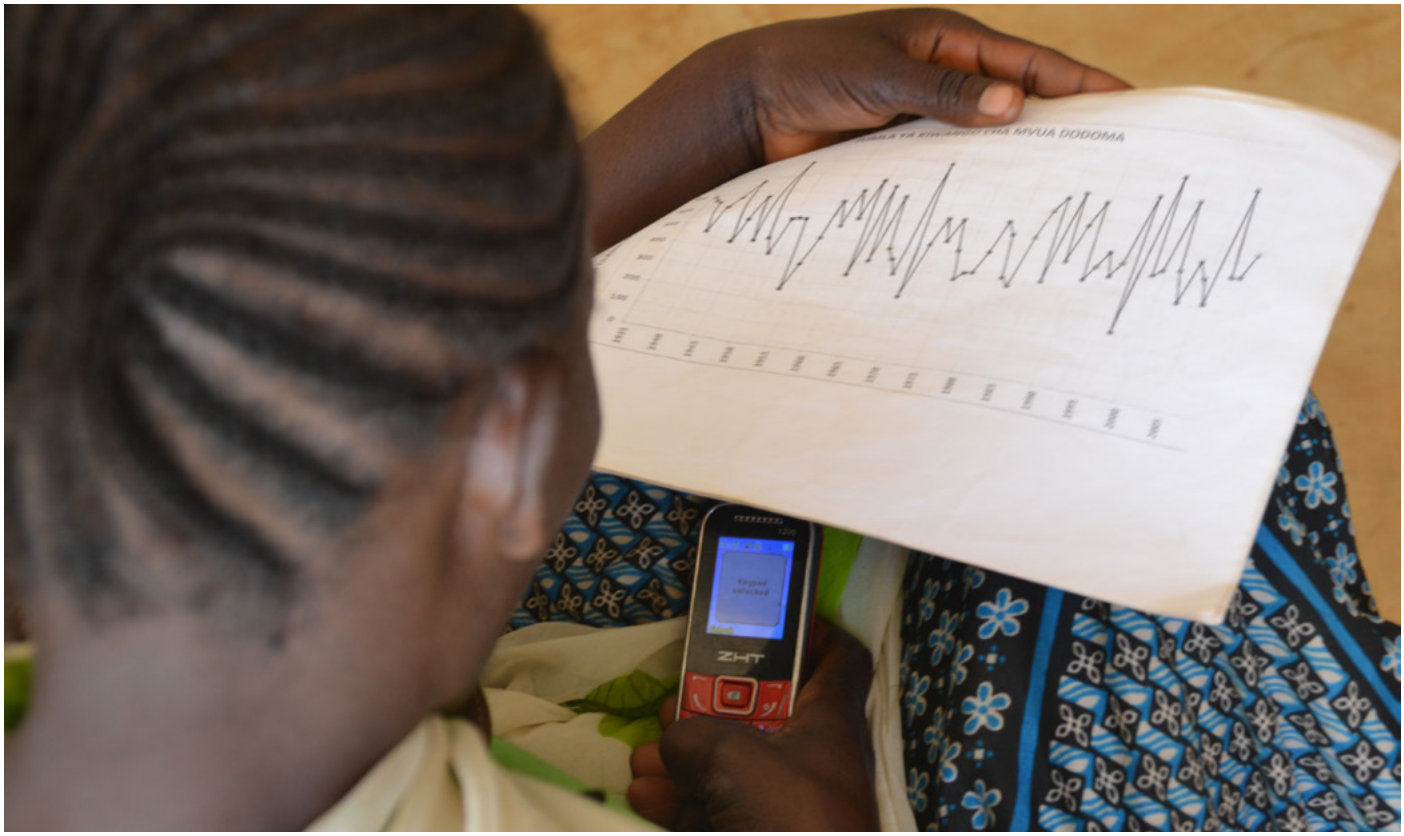
Approaches for evaluating the benefits of climate information

The paper classifies the approaches available to quantitatively estimate the benefits of climate information into four categories: economic modelling, stated preference, avoided loss and benefit transfer.

The review considers relevant and recent studies that used methods in these categories, and details how the methods are used to estimate the benefits of investing in climate services for the agriculture sector in Africa.

The authors explain the benefits of the four types of approaches as follows:

- Economic modelling has so far been used mainly for understanding the scope for using climate information (primarily weather and seasonal forecasts) for agricultural management decisions.
- Stated preference is a reasonably simple and cost-effective approach for estimating the subjective value that individuals place on existing climate services.



C.Schubert (CCAFS)

Participatory climate service and information training in Tanzania. The trainings showed farmers how to calculate risks and probabilities of crops failure, while identifying which crops could work well in their area.

- When estimation of the benefits of climate services in the agriculture sector is conducted with limited time and resources, as is common in Africa, the benefit transfer method can be used to estimate value in one geographical location based on evidence from another.
- The avoided loss approach is a good fit for assessing the contribution of early warning information to disaster risk management, including interventions designed to protect farmer and pastoralist livelihoods from frequent climate variabilities and extremes and in the face of climate-driven food crises, particularly in East Africa.

The paper concludes that all of the methods reviewed can provide the necessary information to convince stakeholders that investing in climate services in the continent is worthwhile. The cases reviewed in the study support the generalization that climate information services are beneficial to the agricultural sector in Africa.

Working with partners, CCAFS continues to help farmers across Africa, Asia and Latin America with climate services that meet their needs and the institutions that support them, enabling the transition toward climate-smart agricultural systems and resilient livelihoods.

The working paper is an output of USAID's Africa Climate Services project, and it was made possible by the generous support of the American people through the United States Agency for International Development (USAID). The opinions expressed are those of the authors and do not necessarily reflect the views of USAID or the United States Government.

Read more:

Blog: Helping farmers adapt to climate change through climate services: https://bit.ly/2wOQgCq
Blog: Partnering with national meteorological services to support farmers in Africa: https://bit.ly/2GoQUGm
Flagship webpage: Climate Services and Safety Nets: https://bit.ly/2INjbeO

Lili Szilagyi is the Communications Consultant at CCAFS East Africa. Catherine Mungai is the Partnerships and Policy Specialist at CCAFS East Africa.

4

Woman to woman: Women scientists share how their work is helping women and girls succeed in agriculture

In celebration of the International Day of Women and Girls in Science, women scientists and researchers share how their work is helping women and girls achieve food security, improve livelihoods, and create a more equitable world.

By Kathlee Freeman

In celebration of the International Day of Women and Girls in Science, women scientists and researchers share how their work is helping women and girls achieve food security, improve livelihoods, and create a more equitable world.

Despite the gains made in education and the workplace, women and girls continue to remain underrepresented in the sciences. In most places, women are less likely than men to earn a degree in the sciences and, globally, researchers remain overwhelmingly men.

Achieving gender equality in the sciences is not just good for individual women, it is essential for development initiatives, like those put forth by the United Nation's Sustainable Development Goals.

In 2013, the United Nations' General Assembly called for the "full and equal access to and participation in science, technology and innovation for women and girls of all ages" in order to "achieve gender equality and the empowerment of women and girls." Two years later, the General Assembly officially recognized February 11 as the International Day of Women and Girls in Science.

In recognition of the day, women scientists and researchers share how they are working with women and girls to improve agriculture around the world, including:

- **Dr. Helen Greatrex,** Associate Research Scientists Index Insurance (CCAFS and the Financial Instruments Sector Team)
- **Deissy Martínez Baron,** Science Officer, CCAFS Latin America
- **Nitya Chanana,** Consultant Researcher, Gender and Social Inclusion CCAFS South Asia
- **Alejandra Marin Gomez,** International Center for Tropical Agriculture (CIAT) and CCAFS Climate, Food and Farming (CLIFF) Network recipient
- **Laurence Jassogne,** Project Coordinator and Systems Agronomist, International Institute of Tropical Agriculture (IITA)
- **Catherine Mungai,** Partnership and Policy Specialist, CCAFS East Africa
- **Le Thi Tam,** Research Assistant, World Agroforestry Centre (ICRAF)

How are women and girls using innovations and innovating in the agricultural field?

Dr. Helen Greatrex (HG): Farming is big business and there's a lot of evidence to show that women and girls are innovating in agriculture. For example, in the Participatory Integrated Climate Services for Agriculture (PICSA) Program, both women and men of all ages use climate information to inform

their decision making for the upcoming farming season. In Ghana, women have co-opted the budgeting lessons from PICSA to improve their small businesses. Another example is agriculture insurance. We've seen that insurance is just as useful for women farmers as it is for men, allowing them to invest in productive options (such as new seed or technology) without having to worry about a 'bad year'.

Deissy Martínez Baron (DMB): Rural women's role is usually related to food security for their families and communities, meaning they must adapt to climate changes while having to keep their family food secure throughout the year. In Cauca, Colombia and Olopa, Guatemala, Climate-Smart Villages (CSVs), women are growing vegetables in home gardens which they irrigate with harvested rainwater. In Cauca, women lead local nurseries where they teach and encourage children to grow and consume vegetables, prepare the soil using food residues and organic matter, and how to monitor local climate with a low-cost weather station. This new approach helps educate little children for a better future.

Nitya Chanana (NC): Women and girls are using technologies such as mobile phones to increase their awareness about agricultural best practices, weather information, and health and nutrition. With the help of training in water harvesting practices, they are also experimenting with different crop varieties to increase their income.

Alejandra Marin Gomez (AMG): Some women and girls in Colombia and Brazil are using a technological innovation in grazing management based on concepts (process) rather than inputs, making it easy to apply and easy to accept. The grazing management strategy proposed, called Rotatinuous, maximizes animal nutrient consumption, with the ultimate goal of making the most efficient use of the pasture. In Colombia, women play an important role in food security and family nutrition through agriculture. In general, most farms are medium and small and dairy farming is the main source of income. On dairy farms, in which entire families participate in production, rural women are actively involved as decision-makers, creating plans, strategies, and training activities. The innovative role of rural women includes the application of new technologies, and interventions to improve livestock productivity and prepare for climate change.

Laurence Jassogne (LJ): While not directly linked to women and girls on the ground, the Policy Action for Climate Change Adaptation (PACCA) project, trains policymakers to integrate gender into policies and plans. The most important component of a gender responsive policy or strategy is

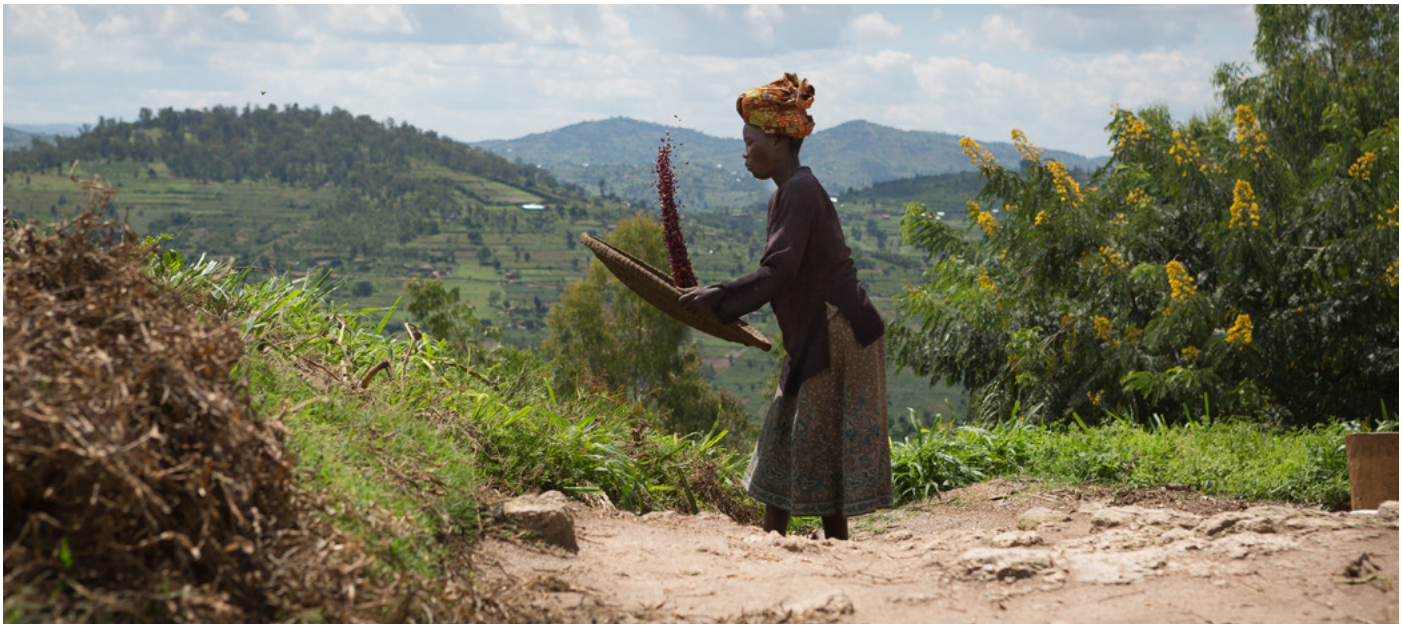
V.Atakos (CCAFS)

Scientists share how their research is making a difference for women farmers.

the inclusion of gender budgeting. While gender is often mentioned in policy, if a specified budget is not allocated, then women and girls will not benefit. Another project is a joint decision-making innovation which will help us understand how decision-making influences and affects women's welfare and livelihoods. We find that, in households where husbands are flexible and allow women to make joint decisions, there is joint planning and implementation of coffee activities, including use of income accrued from sale of coffee beans. In households where husbands are inflexible, women are forced to find ways to go around husbands to achieve their goals.

Catherine Mungai (CM): In most cases, you find that women have a close relationship with nature so they are able to provide indigenous and local knowledge. They are also good adopters of climate-smart technologies and practices. We find that women are always willing to learn new things and share information. So, if a woman attends a meeting, she goes home and tells her husband and even the children what transpired.

Le Thi Tam (LTT): Women in North Central Vietnam are involved in various agricultural activities and practices that are already climate-smart and which have been passed down generation to generation. However, there is still room for improvement. Improved access to actionable climate information services and agro-advisories can help women better manager their farms. As women are often in charge of fertilizer application, climate and weather forecasts can help them determine when to apply fertilizer and how much they should use. Additionally, some farmers are making compost



F. Fiondella (IRI)

Christine Niragire from Nyanza district, Rwanda sorting her beans after harvest.

from crop and livestock waste by using micro-organisms. Not only does this produce good quality compost, but it reduces the use of chemical fertilizer.

Can you give an example of how your research is helping women farmers?

HG: Agricultural insurance is a really interesting topic, because it's very context specific. Its impact depends on the insurance itself and the thing that's being insured. In general, although many women are buying insurance, it tends to be a male dominated market. I'm working on a project, The Social Impact of Weather Insurance for Agriculture, to explore the reasons behind this. In general, we've seen that women are interested in agricultural insurance, but the product being protected isn't one they want. For example, the insurance is set up for the wrong crop. In some cases, we found that women have less access to technology, like mobile phones which are commonly used for insurance registration, or sometimes they simply didn't receive the right information.

DMB: Our research enables women to make informed decisions on what, where, and when to plant crops to feed their families and to sell surpluses and increase family income. Through the women's producer association in Cauca CSV, women have been able to sell oversupply from their vegetable home gardens to community members and in urban areas. They continue to diversify the products they grow and aim to stabilize production so they can satisfy the increasing demand.

NC: The gender analysis done as part of our projects is helping to identify appropriate interventions to help women farmers. For instance, female led solar cooperatives in Nepal's CSVs help female farmers reduce dependency on rainfall, grow high value crops, and earn a higher income. This, in turn, has enabled them to enhance their identities and dignity within the community.

AMG: In this case, the technological innovation, Rotatinuous, could help women and girls improve their incomes and gain more free time to spend with their families. Rotatinuous is still being evaluated in Colombia, but it has been widely used in Brazil, where it was developed by a Grazing Ecology Research Group. There, smallholders are using this innovation in grazing management, with results including enhanced productivity and a reduced dependence on external inputs. The social impact in those communities has been quite significant, related, in a large part, to the greater availability of free time for families to spend together. This simple strategy is easy to access and, additionally, allows for improvements in production systems, including those led by women farmers.

LJ: This is one of my biggest questions. Sometimes I think the project is helping women, sometimes it is the opposite. For policy work, it would be great to see if gender mainstreaming is actually leading to positive changes in women's livelihoods.

LTT: In My Loi village, located in the Ha Tinh province, the Agro-Climate Information Services for Women and Ethnic Minority Farmers (ACIS) project is helping farmers access climate information and agro-advisories. ACIS was developed based on a participatory action research approach, so it brings together multiple stakeholders, including weather forecasters, extension and agriculture staff, local authorities, farmer unions, and farmers. Farmers have the chance to interact with various stakeholders. Additionally, gender is mainstreamed throughout all project activities and trainings. After participating, women use input more efficiently, choose appropriate crop varieties, avoid crop loss, and adjust their farming schedule to avoid flood risks. Other advancements include improved goat cages, using microorganisms for chicken beds and composting, and diversified vegetable production.

How are scientists/researchers working to better meet the needs of women and girls?

HG: I hope in lots of ways! We're giving women and girls more of a voice in program design processes and allowing them opportunities to provide feedback. We're recording the stories of women and girls to understand why their needs aren't being met, then using this to look for missed opportunities that could really benefit them. Finally, we're trying to move away from 'one-size-fits-all' approaches towards allowing people to make their own decisions for their own individual farms and situations.

DMB: Understanding the challenges women and girls face in today's rural and urban society helps us to conduct our research so that we can provide insights and solutions to improve livelihoods and life quality. The threats of climate change and variability add to local vulnerabilities. We increasingly take into account the local characteristics – the environment, the culture, socio-economic factors – that pose challenges to women and girls, in order to come up with tailored innovations to address these issues.

NC: Researchers are working to prioritize and identify suitable interventions and research new methods to facilitate technology adoption. These are complemented with training and capacity building efforts to better implement research activities. New research tools and data techniques are also being explored in this field.

LJ: From a scientist perspective, we need to include gender at the start of the proposal development stage. Especially at IITA and within CCAFS's PACCA project, gender is not considered through value chains, but through a system approach to understand gender dynamics, including constraints and opportunities to increase women's participation and benefits.

CM: We are working together with other research institutions to test livestock, such as sheep and goats, that are also resistant to climate change and also can be a source of food. We also encourage them to plant different types of crops on their farms so they have a diversity of crops so if one crop fails at least they are able to rely on another crop as a source of food.

AMG: Scientists/researchers recognize the important role of rural women in the different productive activities of the agricultural sector. There are several work fronts developed in Colombia which aim to make it easier for peasant women to live in the countryside, most of them related with entrepreneurship, associativity, basic human health care, nutrition, and animal husbandry. In Colombia, scientists/researchers are working on innovations based on concepts, which are easy to apply, not dependent on external inputs, looking to improve the quality of life of farmers, and which reduce the impact of their activities on the environment. However, more research on how rural women can integrate more and better into society are needed. Colombian researchers always hoped that scientific research could reach rural women because we know innovation can help transform their lives.

LTT: Talking to women and giving them the opportunity and platform to express their ideas with a wider audience of stakeholders is the best way to understand what women farmers need and how to help them overcome their challenges. In ACIS, men and women may have difference preferences for the format in which they receive forecast information. It is necessary to evaluate or explore these differences and how to make both genders understand and make use of the information they get.

Read more:

Recognizing women in science: https://bit.ly/2Ilrwae
Celebrating women scientists on the International Day of Women and Girls in Science: https://bit.ly/2Im7Cfh
Women have a key role in mitigating climate change: https://bit.ly/2t5hMcU

Kathlee Freeman is a communications consultant with the CGIAR Research Program on Cimate Change, Agriculture and Food Security (CCAFS).

5

Lushoto District Climate Change Learning Alliance reveals priorities for land restoration

Participatory land use planning is seen as key to ensuring sustainable land use in Lushoto, Tanzania.

By Perez Muchunguzi and Caroline Mwongera

Arriving in Lushoto through its steep winding road has always brought an interesting feeling. As you climb from the valley in Mombo, one observes that farmers are growing a number of crops in the valleys and between the hills, a sign of diversification on their farms. Signs of off-farm activities such as local trade are also visible.

It all seems okay but when you speak to the residents, they tell you that changes, largely negative, are already happening. Some of the most frequently mentioned changes include decline in crop production, increased soil erosion, declines in forest cover, rising temperatures, drying of rivers, decreasing water in the valleys and irregular rainfall patterns.

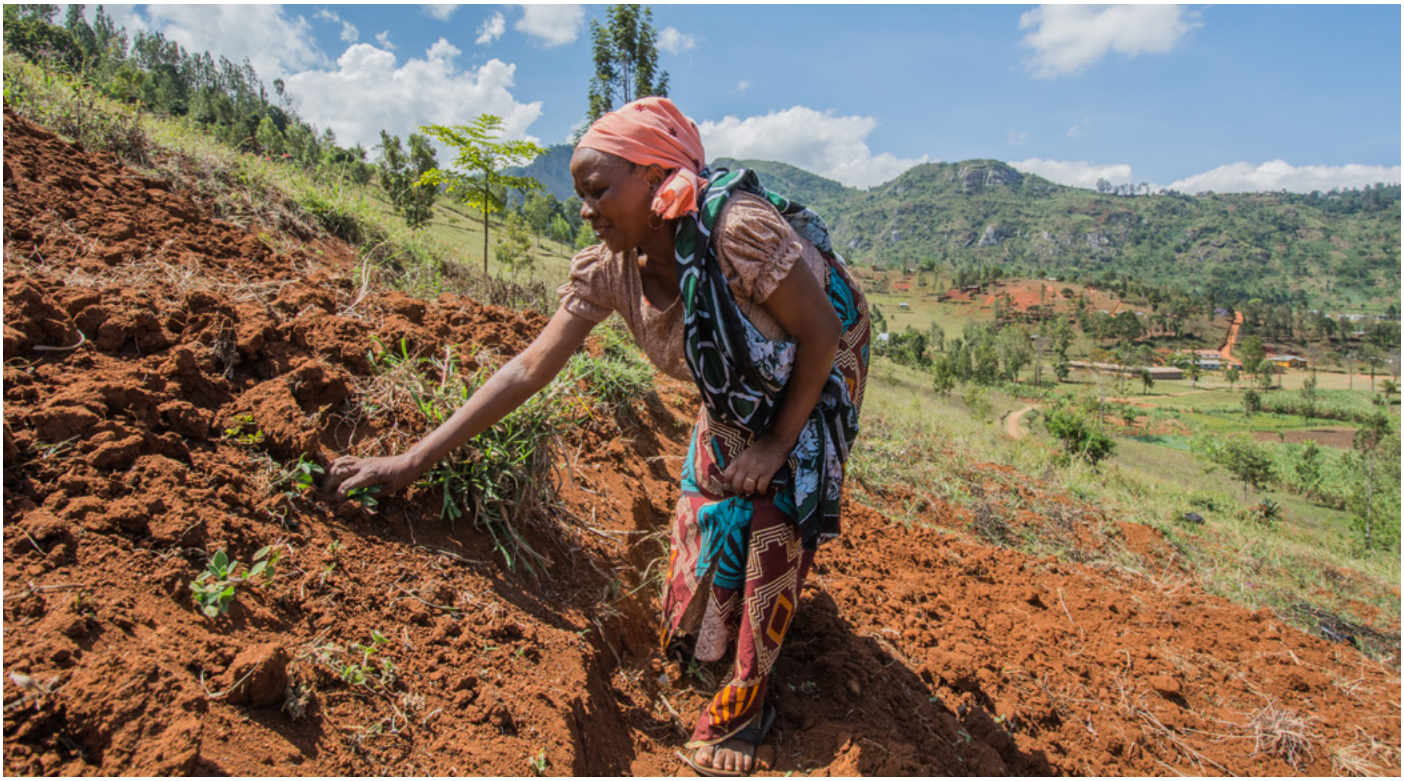
The Lushoto District Climate Change Learning Alliance, International Centre for Tropical Agriculture (CIAT) and International Institute for Tropical Agriculture (IITA) convened a meeting in December 2017 with an aim of jointly identifying with the stakeholders specific actions for land restoration and collective multi stakeholder efforts. It brought together farmers and local leaders from the four villages of Boheloi, Mbwei, Sunga and Madala, representatives from the Environment Management Unit, Ministry of Agriculture, university staff, civil society organizations, faith-based organizations, and District authorities.

During the opening session, the Lushoto District Council Chairman, Hon. Lucas Shemndolwa stated,

We need a holistic approach to land restoration. For example, the youth migration is a big problem. The elderly population remaining behind does not have the energy to undertake high labor demanding land management practices such as terracing. We also need to continue creating awareness on water, land and ecosystem management among the younger generation. It is possible that past generations contributed to land degradation out of ignorance on the impact of their practices. We also need to provide households with the interventions required to enable them to support policies targeted at promoting sustainable land and water management. For example, by providing alternative energy sources. Research needs to provide information on the context specific practices – what is needed where."

Facilitated by Caroline Mwongera, stakeholders generated a long list of soil and water management practices and actions appropriate to the local context. This resulted in about 30 technologies. Three groups were formed to carry out further prioritization: a women's group, a men's group, and a group of local experts.

There are some similarities in what was prioritized especially between the men's and women's groups. Interesting to note is that whereas the expert group focused more on the practices themselves, the other two groups (men and women) took a



G. Smith (CIAT)

Terracing is one option to help restore land on the steep slopes around Lushoto, Tanzania.

more comprehensive approach and included both practices and the enabling environment required to achieve land restoration. Some of the technologies bundle together many practices which can pose a challenge to scaling. This suggests that there could be a need to develop a stepwise approach to enable farmers to choose what is most useful and feasible for them to adopt.

We have been identifying priority areas and developing implementation plans, but the challenge is that the majority of our partners come with set objectives and priorities. We believe this is one of the issues why we see slow progress," says Mr. Eliezer Moses, Lushoto District Agricultural Officer and the Climate Change Learning Alliance facilitator.

For sustainable soil and land management to occur, a system-wide holistic approach looking beyond technologies to address also the incentives for adoption and implementation challenges is important.

As part of the solution, the District Chairperson highlighted that population management is critical to reduce pressure on the environment. Participants also advocated for participatory land use planning to ensure land is used sustainably to support various livelihood activities and ecosystem services.

This work was implemented as part of the CGIAR Research Program on Water, Land and Ecosystems (WLE) and Climate Change, Agriculture and Food Security (CCAFS). Actions identified for land restoration will be shared to inform future investments including the WLE Program and other development partners.

Read more:

Blog: Reflecting on the role of climate change district learning alliances: Are they beneficial? https://bit.ly/2ImaPeP
Blog: Lessons for successful scaling of climate-smart agriculture innovations: https://bit.ly/2L6JDP9
Related journal article: Adoption and Dissemination Pathways for Climate-Smart Agriculture Technologies and Practices for Climate-Resilient Livelihoods in Lushoto, Northeast Tanzania: https://bit.ly/2rMfWLb

Perez Muchunguzi is a Multi-stakeholder Specialist with IITA based in Kampala, Uganda. Caroline Mwongera is a Farming Systems & Climate Change Scientist with CIAT based in Nairobi, Kenya.

6

Africa Environment Day: CCAFS celebrates progress in Tanzania, Uganda, Burkina Faso and Senegal

In celebration of Africa Environment Day 2018, CCAFS is highlighting recent and ongoing work advancing environmental sustainability in four African countries: Tanzania, Uganda, Burkina Faso and Senegal.

By Catherine Mungai, Dansira Dembele and Marissa Van Epp

Tanzania: a holistic approach to land restoration in Lushoto District

At first glance, all seems well in the Lushoto District in Tanzania. But speak to the residents, and you begin to understand that they are suffering: declining crop production, increased soil erosion, declining forest cover, rising temperatures, drying of rivers, decreasing water in the valleys and irregular rainfall patterns are making life harder.

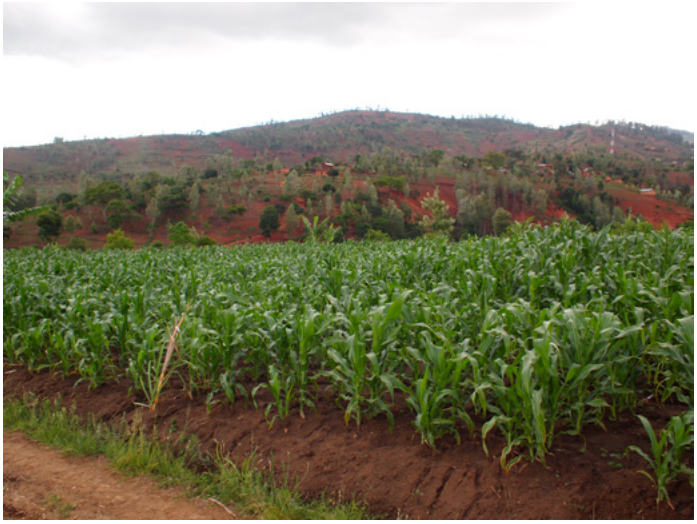
To rectify these issues, the Lushoto District Climate Change Learning Alliance, International Centre for Tropical Agriculture (CIAT) and International Institute for Tropical Agriculture (IITA) convened a multi-stakeholder meeting in December 2017. The aim of the meeting was to jointly identify specific actions for land restoration and collective multi-stakeholder efforts.

Three groups were formed to carry out prioritization: a women's group, a men's group, and a group of local experts. While the expert group focused on the practices themselves, the other two groups (men and women) took a more comprehensive approach and included both practices and the enabling environment required to achieve land restoration. Meeting participants also advocated for participatory land use planning to ensure land is used sustainably to support various livelihood activities and ecosystem services.

Uganda: planning for climate-smart agriculture at landscape level

In developing countries, forests and trees on farms are important carbon sinks and are part of complex rural landscapes that fulfill the livelihood needs of the rural populace who rely on a variety of ecosystem services such as fuel, food, and water. Agriculture, though crucial for food security and development, remains the key driver of deforestation, and the major cause of greenhouse gas (GHG) emissions from the forest sector. CCAFS is supporting a landscape approach to these issues, making it possible to develop solutions for agriculture that do not come at the expense of forests, and vice-versa.

In Uganda, the Rakai district learning alliance has integrated various sectors and stakeholders at the landscape level to enhance synergies between proudctivity, adaptation and mitigation, the three interlinked pillars of climate-smart agriculture (CSA), as well as the sustainable management of ecosystem services. Through the learning alliance, stakeholders have discussed the need to show farmers the benefits of conserving forests and wetlands. Helping farmers to understand the utility of conservation may pave the way for a bottom-up approach to conservation.



A. Eitzinger (CIAT)

Crops growing in Lushoto, Tanzania. As a consequence of increased population pressure on land, extensive farming through clearance of bushes and forests has become common.

The learning alliance has also served as a platform for participatory land use mapping. The mapping exercise helped to build the capacity of stakeholders to engage in CSA planning at landscape level, and also encouraged synergies between conservation actors that will facilitate sustainable use of natural resources in the district.

Burkina Faso and Senegal: combating environmental degradation with the Farmer Managed Natural Regeneration approach

The Sahelian and Sahelo-Sudanian zones in the Sahel are characterized by savanna, few trees, and a dry climate. Increasing aridity, along with a growing human population, continues to reduce plant cover, making the existence of rural populations increasingly difficult. In localities like Yatenga, Burkina Faso and Kaffrine, Senegal, where CCAFS is implementing the Climate-Smart Village approach, the number of trees is decreasing and the environment is deteriorating. A study published in the Journal of Arid Environment states that one in three trees in the Sahel has died since 1950.

According to CCAFS research, integrating trees into agricultural systems helps rural communities adapt to climate change, mitigate its impacts, and improves their livelihoods. One method for doing this, and for more generally restoring degraded lands to regain their health and productivity, is known as Farmer Managed Natural Regeneration (FMNR). A low-cost land restoration method and that regenerates vegetative cover by re-growing living tree stumps, FMNR is now being considered as a promising climate-smart agriculture practice.

In the villages of Daga Birame, Senegal, and Tibtenga, Burkina Faso, an initial study conducted in 2013 identified erosion, droughts, and strong winds as key contributors to soil degradation. To help solve the problem, CCAFS and its partners—the World Agroforestry Center (ICRAF), Burkina Faso Environmental Institute for Agricultural Research (INERA), and Senegal Agriculture Research Institute (ISRA)—set up a FMNR demonstration trial. The trial aims to improve productivity while rebuilding biomass and carbon sequestration.

Read more:

News update: Lushoto District Climate Change Learning Alliance reveals priorities for land restoration: https://bit.ly/2IR8jfU
Blog: Climate-smart agricultural planning at a landscape level in Uganda: https://bit.ly/2IqBfIq
Blog: Lessons for successful scaling of climate-smart agriculture innovations: https://bit.ly/2Gqm7ZB
Blog: How climate-smart is the Farmer Managed Natural Regeneration method? https://bit.ly/2Gnj1FZ
Case study: Developing a Climate-Smart Village for Reduced Climate Risk and Food Insecurity in Daga-Birame, Senegal: https://bit.ly/2rMkvFf

Catherine Mungai is the Partnerships and Policy Specialist at CCAFS East Africa, based at ILRI in Nairobi, Kenya. Dansira Dembele is Communications Officer at CCAFS West Africa, based at ICRISAT in Bamako, Mali. Marissa Van Epp is Global Communications and Knowledge Manager for the CCAFS Program Management Unit, based at Wageningen University and Research in the Netherlands.

7

Increasing farmers' food security with improved manure management practices in Nyando

Research assesses manure management practices and current nutrient losses that occur on-farm.

By Lili Szilagyi and John Recha

Millions of smallholder farmers around the world keep livestock and grow crops on their farms to improve their livelihoods and for food security. An essential aspect for smallholder crop-livestock farmers in sub-Saharan Africa is productive soils that is necessary to maintain productivity. Manure is an important source of nutrients for soils; it can sustain crop productivity as it is an important by-product to serve as fertilizer for smallholder farmers.

Flavia A.M. Casu, a student at Wageningen University (WUR) has recently carried out research in Kenya on how the improvement of manure management practices could reduce nutrient losses and increase overall manure quality. The study took place in Nyando Climate-Smart Villages (CSVs) in Kenya, under the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

The use of manure as fertiliser is seen as a promising and economically viable way to improve soil fertility and crop production and through this, develop a farming system that is more resilient against the effects of climate change. In order to effectively use manure as fertiliser, different management options exist to decrease the risk of nutrient losses and consequently increase the quality of the end product.

Data collection took place during a three-month period of both field and laboratory work. Farmers were interviewed through a questionnaire on household and farm characteristics, market orientation, livestock composition and manure management perceptions and practices. Besides the survey, manure samples from large (cattle), small ruminants (sheep and goats) were taken from each farm. For both stored and fresh manure, 300 grams were stored in plastic zip lock bags and transported in cooling boxes to the International Livestock Research Institute (ILRI) laboratories for further analysis.

Manure management practices in Nyando

Between resource endowment categories, differences in management, decision-making and perspectives on manure management were present. However, all farmers included a basic form of manure management and confirmed the importance of collecting manure from their livestock and incoporating it on-farm. Manure was thus seen as an important livestock waste and it was believed that manure was beneficial for crop production on the landscape.

The laboratory results showed a difference in nutrient content between fresh and stored manure. The carbon content was higher in fresh manure, which can be explained by the storage period of manure after collection, which is on average between 6 and 12 months.

The results show that from excretion to application, large

S.Mann (ILRI)

Cows are tethered on a crop field to manure it. According to the study, improved manure management practices could help farmers in Nyando reduce the crop nutrient gap.

losses occur and that most farmers have far less manure (and thus nutrients) available than on average required per hectare. However, if collection and application of manure would be taken more seriously, farmers could increase nutrient levels that could nourish Current manure management practices lead to higher nutrients losses.

Improving manure management

The research suggests that improved manure management practices will help farmers reduce the crop nutrient gap. These practices include:

- covering manure with a plastic sheet;
- improving floor and roof of the storage unit;
- decreasing the storage period;
- adding organic materials to the manure heap;
- increase the frequency of manure collection, and
- improve flooring of stalls where livestock is kept overnight.

The study was carried out with support from the International Livestock Research Institute.

Read more:

Download the study: Manure management and nutrient cycling in smallholder crop-livestock systems in Nyando, Kenya: https://bit.ly/2L6yfT3

Lili Szilagyi is the Communications Consultant for the CCAFS Program Management Unit and CCAFS East Africa. John Recha is a Post Doctoral Fellow with CCAFS East Africa.

8

The climate-smart way of transforming agriculture in Africa

Highlighting the opportunities and challenges of scaling up climate-smart agriculture and Climate-Smart Villages in East Africa.

By Lili Szilagyi

Agricultural systems in East Africa are mainly rain-fed and highly vulnerable to climate change and variability. The frequency and severity of climate shocks such as drought, floods, heat and cold stress have increased with negative impacts on agriculture and food security.

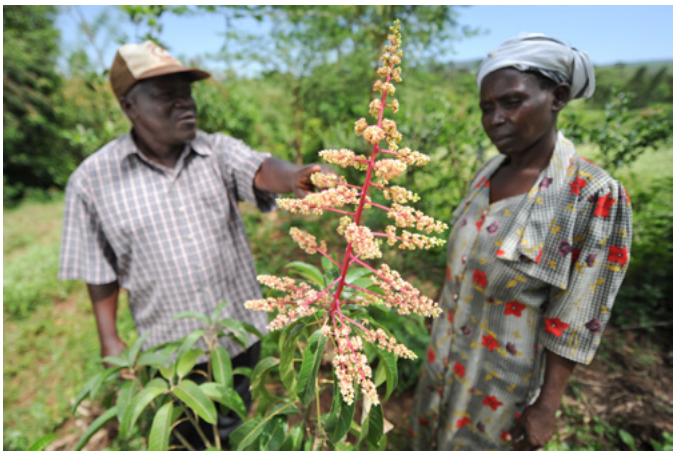
The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) East Africa Regional Program is working in Ethiopia, Tanzania, Uganda and Kenya to help farming communities adapt to the effects of climate change. CCAFS work involves action on the ground, engagement with partner organizations and policymakers, and research. CCAFS East Africa research work focuses on climate-smart agriculture (CSA) technologies and practices, and the testing of these CSA interventions in Climate-Smart Villages (CSVs). In a recently published book titled "Climate and Environmental Justice in Africa", CCAFS scientists highlight the opportunities and challenges of scaling up CSA and CSVs in the region.

Climate-Smart Agriculture Partnership for Africa: Prospects and Challenges

In the article on CSA partnerships for Africa, CCAFS scientists express the need to reduce climate vulnerability of the African agriculture sector, and suggest that there's no silver bullet pathway for achieving sustainable agricultural growth in Africa. Instead, the continent's agricultural transformation will depend on multiple and context-specific pathways that seek to address the main challenges of climate change, food and nutrition security, natural resource depletion and land degradation, limited market and trade opportunities, while contributing to mitigation of greenhouse gas (GHG) emissions.

CSA provides opportunities that can address the diverse needs of stakeholders as well as the production contexts of different farmers to yield winning outcomes of increasing food production and incomes, and reduce GHG emissions. The authors highlight a few examples of CSA practices that perform well under variable weather conditions, such as development and adaptation of stress tolerant crops and livestock breeds; innovations for combining conservation agriculture (CA) and integrated soil fertility management (ISFM) technologies; diversification in crop-livestock production sys¬tems; water harvesting and soil and water conservation in rain-fed and irrigated systems.

The authors suggest that the success of CSA in Africa will depend on the capacity of farming communities, governments, and regional and national institutions to understand various climate change realted risks. They express the need for a continent-wide partnership of diverse stakeholders to address the multiple aspects of the problems and challenges which the CSA agenda seeks to achieve. The authors highlight the Climate-Smart Agriculture Partnership for Africa (CSAP-Africa); as a response to the global calls for the promotion of cli¬mate-smart agriculture solutions, as most governments and sub-regional organizations in Africa are developing policy frameworks and strategic plans for climate change adaptation and mitigation.



K. Trautmann (CCAFS)

Farmers in the Nyando Climate-Smart Villages, where CCAFS is testing a portfolio of climate-smart agricultural interventions.

Climate-Smart Villages: A Community Approach to Climate Resilient Agriculture and Sustainable Livelihoods

The diversity of Africa's farming systems, coupled with socio-cultural practices and systems of social and political governance, demands for lo¬calized adaptation interventions. Agricultural adaptation will involve developing a range of new technologies and farm-level innovations for crops and livestock, farmer servic¬es, markets, and institutional arrangements and policy reforms. Localizing interventions will enable farmers and farmer groups to access appropriate agricultural technologies, climate informa¬tion, and enable technological and institutional innovations.

To explore how localized interventions can enhance and sus¬tain agricultural productivity in addition to increasing resilience to climate change, farmers, in partnership with CCAFS East Africa, national and international research institutions, the private sector, non-governmental organizations and communi¬ty-based organizations (CBOs) initiated the CSVs approach that could increase food security, enhance resilience to climate change and reduce GHG emissions.

CCAFS has been working in the Nyando Climate-Smart Villages in Kenya, with over 2,000 households, to test a portfolio of climate-smart agricultural in¬terventions. CCAFS and partners provide opportunities for adaptive learning and innovation that builds household and community resilience through participatory action research and field-based learning approaches.

Through this process, farming households are making progressive changes to their crops as well as introducing new climate resilient livestock breeds. The farming households are able to apply new agricultural knowledge and practices to address climate-related risks and build resilience at local scales.

By using the evidence from the CSVs, CCAFS is also involved in engaging policymakers to pro-vide a supportive policy environment in which farmers can ac¬cess technologies and other incentives for adaptation.

There is huge potential for African policymakers at local, national and regional or continental levels to embrace CSA and scale up CSVs; and commit to transformational change processes that spur sustain¬able agricultural growth and utilization of natural ecosystems. But this will call for revamping their knowledge of agriculture and technology systems, in particular, critical technical and poli¬cy advisory services on CSA as well as a sustainable governance of agricultural support systems.

Read more:

Climate Smart Agriculture Partnership for Africa: Prospects and Challenges: https://bit.ly/2L6N0ph
Climate Smart Villages: A Community Approach to Climate Resilient Agriculture and Sustainable Livelihoods: https://bit.ly/2k37wux
Stories of Success:Climate-Smart Villages in East Africa: https://bit.ly/2Im57JY
Project page: Scaling up Climate-Smart Village models in East Africa: https://bit.ly/2wRXCoW
Blog: Examples of good practices on climate change adaptation from Nyando shared to foster learning: https://bit.ly/2Ku4w5q

Lili Szilagyi is the Communications Consultant for the CCAFS Program Management Unit (formerly known as Coordinating Unit) and CCAFS East Africa.

9

8 new projects join forces to scale climate-smart agriculture

The 4th call of the Food & Business Global Challenges Program, a collaboration between CCAFS and the Dutch government, kicks off with a focus on partnerships for climate-smart agriculture outcomes in East Africa.

By Marissa Van Epp

Eight projects working to scale climate-smart agriculture (CSA) practices in East Africa were funded in the fourth call of the Food & Business Global Challenges Program (GCP4). In a kick-off meeting in Arusha, Tanzania, on February 6th and 7th, the eight projects joined forces to develop ways of working together to address the combined challenges of climate change and food insecurity. In a blog post on the Food & Business Knowledge Platform, Corinne Lamain (NWO WOTRO) offers her take on the projects and explains how the meeting fostered collaboration:

Creating an enabling environment

The eight projects, which are aligned with ongoing CCAFS research, aim to create an enabling environment for CSA scaling. The projects address different aspects of this enabling environment, like inclusiveness of value chains and business models, and innovative finance mechanisms. The kick-off meeting was an opportunity for the projects to agree on a theory of change for the portfolio, and also identify cross-cutting objectives to collaborate towards. One example of a collaboration formed was among the projects focusing on dairy: these projects jointly developed a pathway to outcomes focusing on supporting institutional behaviour change around inclusive business models and low emissions development.

Partnering to strengthen outcomes

To identify potential partnerships that can help the projects achieve their objectives, workshop participants mapped similar initiatives and networks in East Africa. The implementing consortia also engaged government representatives of relevant ministries in three countries in the region, who offered their insights on the policy context, as well as regional organizations, whose input provided valuable perspective on the proposed impact pathways.

G. Smith (CIAT)

Uyole 03, an improved bean variety developed by CCAFS and partners. The bean is helping farmers to improve their lives and empowering women.

Read the original story by Corinne Lamain on the Food & Business Knowledge Platform website: Scaling Climate Smart Agriculture in East Africa: https://bit.ly/2rQtDI7

Marissa Van Epp is the Global Communications and Knowledge Manager for the CCAFS Project Management Unit.

10

Addressing climate risks through improved potato production in Lushoto Climate-Smart Villages, Tanzania

Farmers in Lushoto select better potato varieties and receive training on improved production practices to enhance their crop management.

By John Recha, Maren Radeny and Stephen Kuoko

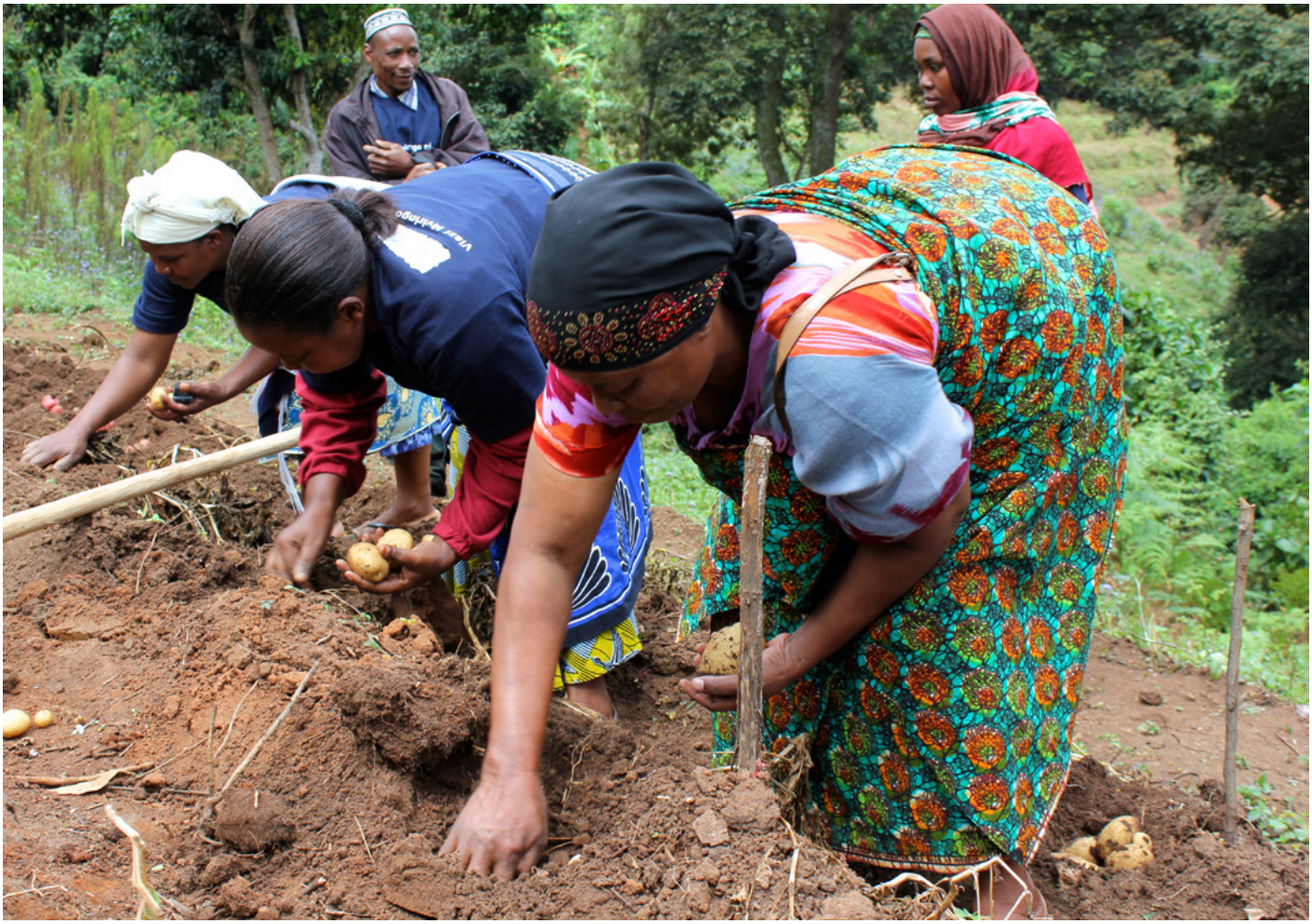
To address climate-related risks in Lushoto District, Tanzania, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) has coordinated a partnership of local government and research organizations. The International Potato Centre (CIP) and Tanzania's Selian Agricultural Research Institute (SARI) are working with the Lushoto District Council in Tanga Region to increase farmers' resilience to climate change.

In 2011, farmers did not think it was possible to grow potatoes three times a year. The potato farmers could not plant more than one crop cycle per year due a lack of suitably adapted varieties, knowledge of improved agronomic practices, and viable, high quality seed. Six years later, thanks to positive changes in these three areas, they now grow potatoes in three cycles per year, using early two early-maturing varieties known as Shangi and Unica (Mkanano). These varieties take 90 days to reach physiological maturity, tripling the production and benefits for a 12-month period.

Better adapted potato varieties, more yield, more farmers involved

"Six years ago, we were growing potatoes only once per year during the long rainy season of March to May. Local varieties like Kidinya were attacked by diseases and we could only plant it once a year, to avoid drier months when disease pressure was high. The partnership facilitated by CCAFS guided us to form savings and credit cooperative organizations, and through them we co-evaluated better-adapted potato varieties that suit our needs, such as Shangi and Unica (Mkanano), which take 90 days in the field, Asante, which takes 100 days, and Mvono, which takes 120 days," said young farmers Florian Vitus and Mputa Mputa of Kwesine and Kwekitui villages. The improved varieties are not only high yielding but also have resistance to late blight disease and are able to withstand high temperatures.

The potato participatory varietal selection started in the administrative villages of Kwesine and Boheloi in early 2014 and involved 50 farmers.On the first attempt, farmers who planted potato varieties meant for consumption tripled the yield, from 7 tons per hectare per season for local varieties like Kidinya, to 24 tons for Asante, 29 tons for Shangi, and 32 tons for Unica (Mkanano) varieties. Farmers who chose to grow the potatoes for seed production but not consumption also tripled their yield. For example, the Asante variety yielded 18 tons per hectare per season for the seed potatoes



S. Quinn (CIP)

Women farmers at the participatory varietal evaluation of CIP potato genotypes in Lushoto, Tanzania.

compared to 5 tons per hectare per season for the local Kidinya variety. This yield doubling effect energized the farmers, and the message spread rapidly. Within six months, the adjacent administrative villages of Maringo, Kwekitui, and Milungui had embraced the co-evaluation trials, involving 135 farmers. Two years later, by the first rainy season of 2016, more than 1,000 farmers were planting the Asante variety in Lushoto.

Production costs for the improved varieties also decreased, because farmers were trained in improved practices. From the selection of planting materials, to planting, pest and disease control, harvesting and post-harvest handling, improved practices were undertaken correctly by over 70% of the farmers. Moreover, due to varietal resistance to late blight and timing of planting, the use of pesticides by the farmers was drastically reduced, further reducing the cost of production. With the use of climate information that involves a combination of both indigenous knowledge and scientific weather forecasting by the Tanzania Meteorological Agency, Lushoto farmers can now plant the early maturing potatoes three times a year.

Access to high quality, viable seeds

Lushoto potato farmers are now linked to the quality declared seeds (DQS) program of the Tanzanian government, which seeks to empower farmers who face challenges with accessing high quality viable seeds. The QDS project involves multiplying seeds at village level, using select trained farmers who grade the seeds based on uniformity in size. QDS seeds are presumed to be free of deadly diseases, like bacterial

S. Quinn (CIP)

Obama; one of the potato varieties introduced to the farmers in Tanzania.

wilt, which causes extensive losses. Within Lushoto District, 41 farmers, including 15 women, have been certified by the Tanzania Official Seed Certification Institute (TOSCI) as potato QDS multipliers. This is one of the highest concentrations of QDS farmers for potatoes within a district in the northern part of Tanzania. Their farms range from 0.25 to 1 hectare in size and the seeds that are produced are sold in nearby villages.

Diffused light storage of potato seed

Lushoto farmers are using the diffused light storage (DLS) technology, which is a low-cost method of storing seed potatoes developed by CIP. DLS uses natural indirect light instead of low temperature to control excessive sprout growth and associated storage losses. The basic criteria for a DLS structure include an insulated roof, translucent walls, and adequate ventilation. The units are built with a combination of timber, corrugated iron, plastic sheets, and fly screen. In Lushoto, the QDS farmers store between 1 to 2 tons of seed potatoes, and DLS has been useful in extending potato storage life and therefore maintaining their productivity.

New partnerships for Lushoto potato farmers

New partnership opportunities have emerged for the Lushoto community. Farmer exchange visits took place between 15 and 21 December 2016, when 153 potato farmers from West Kilimanjaro region, including 53 women, travelled to Lushoto for a one-week farmer learning tour from their Lushoto peers. Apart from the knowledge exchange, trade ties were formed through which the QDS Lushoto farmers will supply the farmers in other parts of northern Tanzania, such as the Kilimanjaro, Meru, and Arusha regions. The farming learning visits to Lushoto are ongoing.

In addition, another 40 farmers, including 15 women, have been recruited into a project called Calories and Household Income in Potato Subsector (CHIPS), which is funded by Kilimo Trust, a non-governmental organization. From March 2018 onwards, CHIPS is linking Lushoto farmers to high-end markets where they can fetch premium prices. Apart from the savings and credit cooperative organizations (SACCOS), another major local farmer organization linked to the project is the Usambara Lishe Trust, comprising 3,000 farmers.

Read more:

Info note: Climate-smart villages and progress in achieving household food security in Lushoto, Tanzania: https://bit.ly/2L6z3aG
Booklet: Stories of Success: Climate-Smart Villages in East Africa: https://bit.ly/2Im57JY
Media coverage: Tanzania Sets Record in Potato Research, to Release Improved Varieties | The Citizen: https://bit.ly/2rUJHtl

John Recha and Maren Radeny work with the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) East Africa Regional Program.

Stephen Kuoko works with the Selian Agricultural Research Institute (SARI) in Tanzania.

11

Climate-smart agriculture is the future for smallholder farmers in Africa

Many success stories from East Africa prove climate-smart agriculture is the way forward to address the impacts of climate variability and change.

By Lili Szilagyi

Climate-smart agriculture (CSA) is proposed as a solution to transform and reorient agricultural systems to support food security under the new realities of climate change.

Climate-smart agriculture (CSA) is proposed as a solution to transform and reorient agricultural systems to support food security under the new realities of climate change.

To address the need for proven and effective CSA options, CCAFS has developed the Climate-Smart Village (CSV) approach as a means to agricultural research for development (AR4D) in the context of climate change. It seeks to fill knowledge gaps and stimulate scaling of CSA. The CSV approach is founded on the principles of participatory action research for grounding research on appropriate and location/context-specific enabling conditions, generating greater evidence of CSA effectiveness in a real-life setting and facilitating co-development of scaling mechanisms towards landscapes, subnational and national levels.

In Nyando, Kenya, CCAFS has been working since 2011 to test a variety of climate-smart practices and technologies to help farmers improve their food security and resilience, while mitigating the effects of climate change.

A recently published blog by the World Bank exemplifies the success of climate-smart agriculture with CCAFS' work in the Nyando Climate-Smart Villages, among others in the region. Our work was also featured in a World Bank publication on climate-smart agriculture successes in Africa.

Results from the Nyando CSVs show that climate-smart practices and technologies help farmers better respond to climate variability; for example, a shift in farming techniques reduces the number of households eating one or no meals each day, and new livestock breeds provide additional income to farmers.

Sharing success stories such as CCAFS work in Nyando can help spread the word on the benefits of climate-smart agriculture and essentially contribute to transforming agriculture in the face of climate change. As COP23 has broken the deadlock, and reached a decision on next steps for agriculture within the UNFCCC framework, the next big step for CCAFS is to showcase our successes to help Parties take meaningful action on agriculture under the UN negotiations.

Read more:

World Bank blog: Climate-smart agriculture: Lessons from Africa, for the World: https://bit.ly/2n5KB3I
World Bank booklet: Climate-smart agriculture successes in Africa: https://bit.ly/2GspyPz
CCAFS booklet: Stories of Success: Climate-Smart Villages in East Africa: https://bit.ly/2Im57JY
CCAFS brochure: Climate-Smart Villages: An AR4D approach to scaling up climate-smart agriculture: https://bit.ly/2InwiUN
CCAFS Info Note: Climate-smart villages and the hope of food security in Kenya: https://bit.ly/1Phepi1

Lili Szilagyi is the Communications Consultant for the CCAFS Program Management Unit (formerly known as Coordinating Unit) and CCAFS East Africa.

Climate-smart villages apply the use of

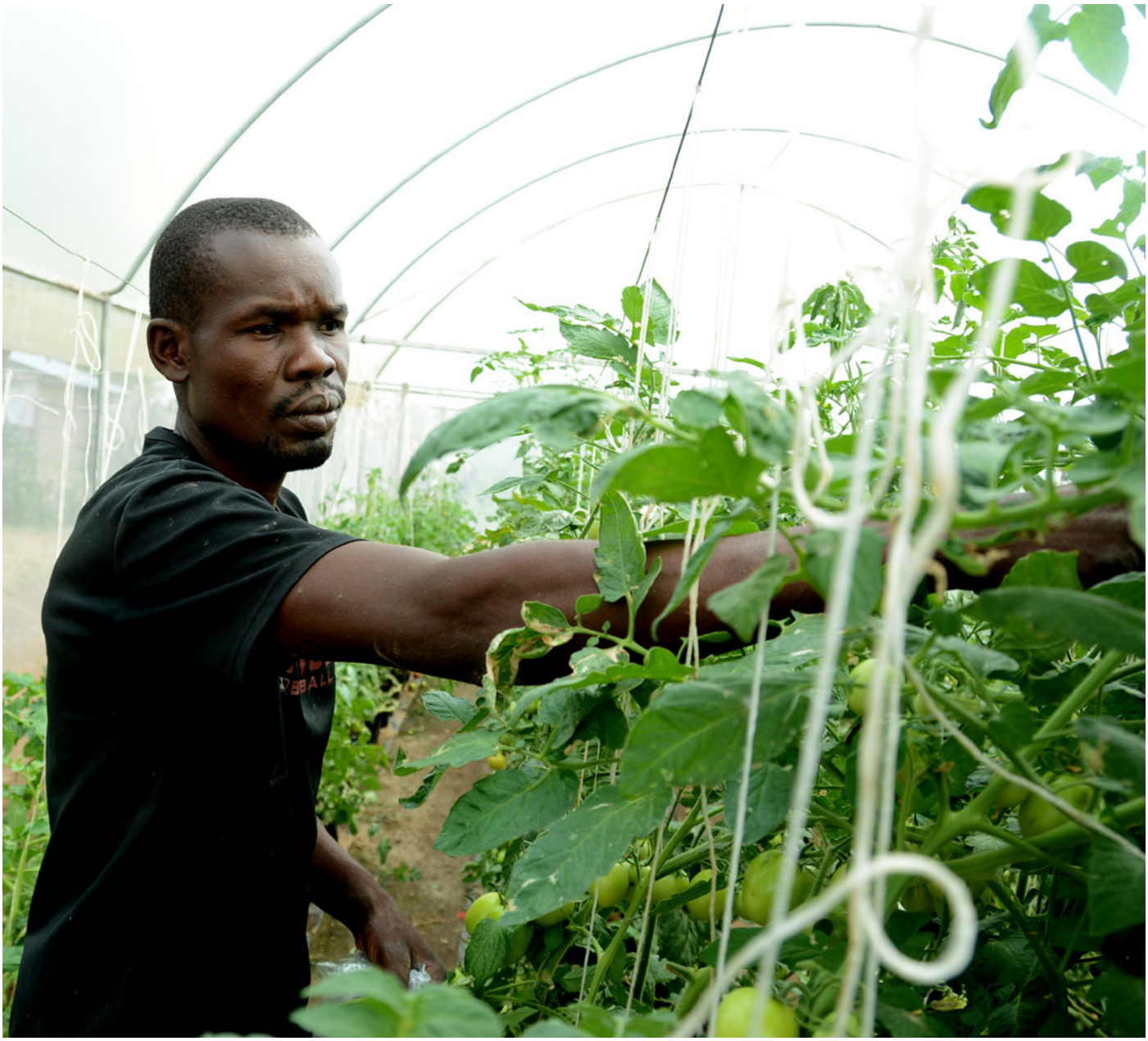
Water harvesting technologies

Effective water management

Greenhouse gas emissions reduction

Improved crop varieties

Resilient livestock breeds



S.Kilungu (CCAFS)

Nyando Climate-Smart Villages are home to a mix of technologies tailored to boost farmers' ability to adapt to climate change, manage risks and build resilience.

Out & About

1. Participants at the Ethiopia Climate-Smart Agriculture Profile launch providing a snapshot of the key issues, climate-related challenges, CSA practices, relevant policies, and financing opportunities. 2. Discussions at the CCAFS Mitigation Options Tool (MOT) workshop in Ethiopia which allowed the technicians and policy-makers to identify suitable agricultural practices that reduce greenhouse gas emissions in different regions and agricultural production systems. 3. CCAFS members and partners gathered in Arusha, Tanzania for the East Africa Strategy Planning Meeting held in February 2018 to jointly develop a portfolio strategy.

In our diary

April
23-21
May
2018

Online discussion: Online discussion on Partnerships, innovations and financing for youth in climate-smart agriculture
Venue: Online

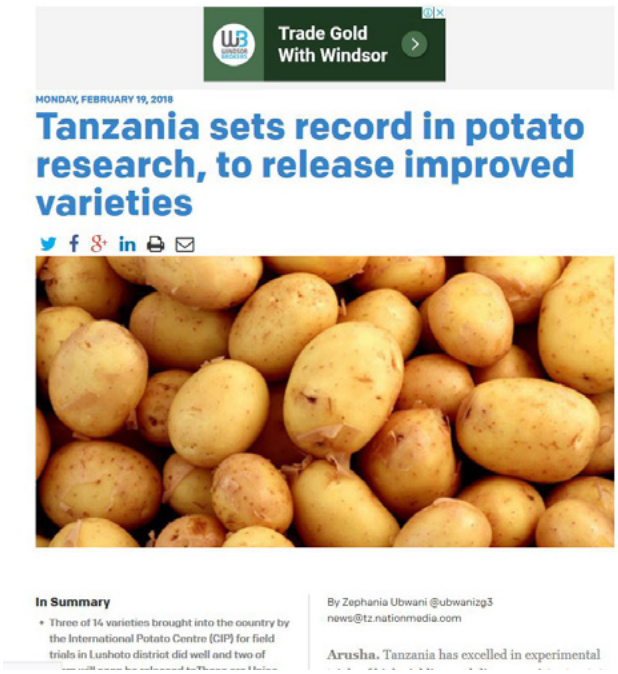
May
1
2018

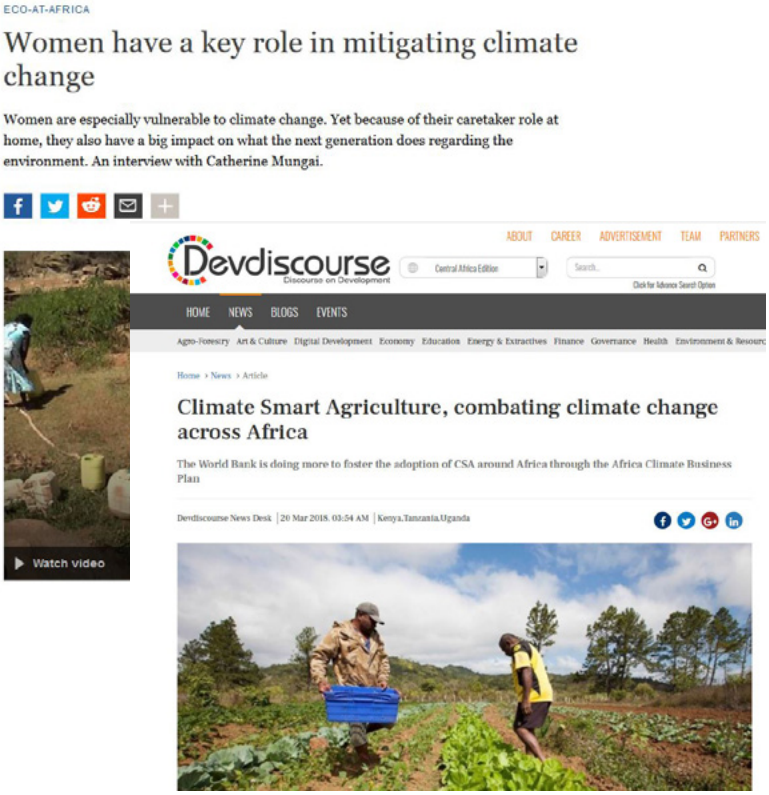
Digital agriculture and Ag-Data integration platform for Ethiopia
Venue: Copenhagen, Denmark

May
22-23
2018

AgriProFocus PAINT-Y expo

CCAFS EA in the media





Women have a key role in mitigating climate change | Deutsche Welle: https://bit.ly/2s4PP1W
Climate Smart Agriculture, combating climate change across Africa | Devdiscourse: https://bit.ly/2s2HJH8
Tanzania sets record in potato research, to release improved | The Citizen: https://bit.ly/2x3SoWU

Further Reading

CCAFS Latest Publications

Report: The feasibility of low emissions development interventions for the East African livestock sector: Lessons from Kenya and Ethiopia: https://bit.ly/2KOziWO

Journal article: Land restoration in food security programmes: synergies with climate change mitigation: https://bit.ly/2s8755A

Working paper: Estimating the economic benefits of alternative options for investing in agricultural climate services in Africa: A review of methodologies: https://bit.ly/2KMNXBW

Journal article: Rainfall variability and drought characteristics in two agro-climatic zones: An assessment of climate change challenges in Africa: https://bit.ly/2x5qIB3

CCAFS Tools

CCAFS website and blog updated daily with news on policy and practice, research, events and downloadable publications from the CGIAR and partners.

Website: http://bit.ly/1gX2uKi Blog: http://bit.ly/Blogs_EastAfrica

Adaptation and Mitigation Knowledge Network (AMKN) is a map-based platform for sharing data and knowledge on agricultural adaptation and mitigation. http://bit.ly/AMKN_Maps

AgTrials Large public repository of agricultural trial data sets, with different crops, technologies and climates. http://bit.ly/AgTrials

Food Security CASE maps Map-based projections of crop area and yields, average calorie availability, and international trade flows across the world. http://bit.ly/Casemaps

MarkSim II Generator of future location-specific rainfall series, based on a choice of General Circulation Models: http://bit.ly/MarkSimGCM

GCM data portal Set of downscaled climate data sets. http://bit.ly/Climate_Data

Dataverse Public portal for full CCAFS data sets such as the baseline surveys from CCAFS East Africa sites that include information on farmers' current adaptive practices. http://bit.ly/Baseline-Surveys

Big Facts website Get all the links on climate change, agriculture and food security: http://bit.ly/1gYWjWt

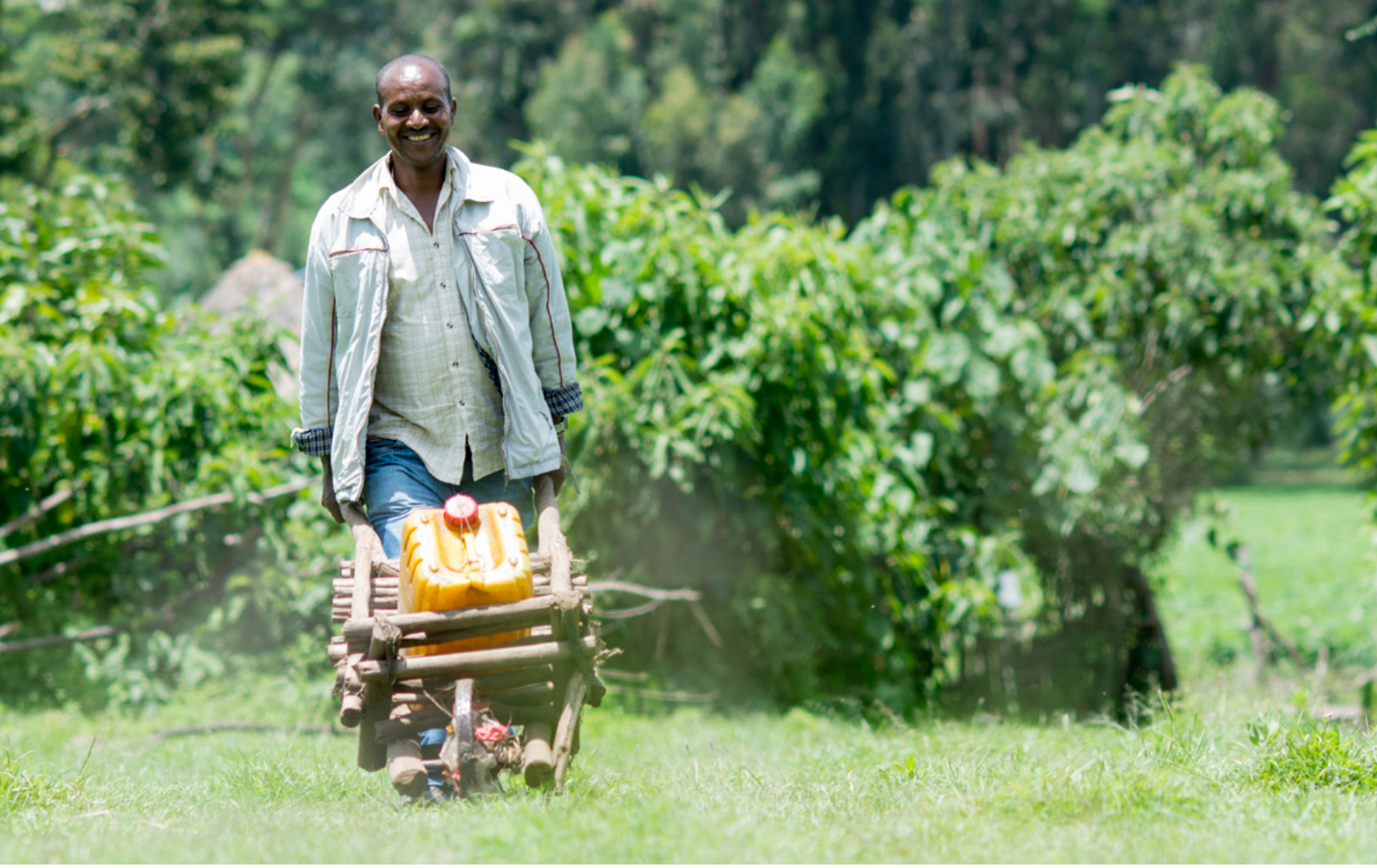
Atlas of CCAFS sites Browse colourful maps of CCAFS research sites in three regions: East Africa, West Africa and South Asia: http://bit.ly/1iSfwHd

Core Sites in the CCAFS regions This portfolio includes brief descriptions of CCAFS core sites in East Africa, West Africa and South Asia, including coordinates of the sampling frames of the baseline surveys: http://bit.ly/1dKwrfG

Adaptation and Mitigation Knowledge Network is a map-based platform for sharing dataand knowledge on agricultural adaptation and mitigation: http://bit.ly/1kiEnng

Climate Analogues This is a tool that uses spatial and temporal variability in climate projections to identify and map sites with statistically similar climates across space and time: http://bit.ly/1pzmVhl

Climate and Agriculture Network for Africa: This web-based platform seeks to link scientists with policy makers to address climate change, agriculture and food security issues in Africa. http://bit.ly/1BHmhG0



CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), East Africa.
P.O. Box 30709 - 00100 Nairobi, Kenya
Phone: +254 20 422 3000 Fax: +254 20 422 3001
Email: ccafsea@cgiar.org
Website: http://ccafs.cgiar.org/regions/east-africa
@cgiarclimate_EA
CGIARClimate
CGIAR Climate Change, Agriculture & Food Security (CCAFS)

CGIAR RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security CCAFS

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Ministry of Foreign Affairs of the Netherlands
Thailand (through the Department of Agriculture)
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